

U.S. ENVIRONMENTAL PROTECTION AGENCY  
POLLUTION/SITUATION REPORT  
Beaverton Mercury - Removal Polrep  
Initial and Final Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region X

**Subject:** POLREP #1  
Emergency Response - Initial and Final POLREP  
Beaverton Mercury

Beaverton, OR  
Latitude: 45.4408173 Longitude: -122.8325763

**To:** Wally Moon, EPA Region 10 (POLREP List)  
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**From:** Randy Nattis, On Scene Coordinator

**Date:** 9/15/2017

**Reporting Period:** 4/6/2017 - 4/28/2017

## 1. Introduction

### 1.1 Background

|                            |              |                                |                |
|----------------------------|--------------|--------------------------------|----------------|
| <b>Site Number:</b>        | 10QB         | <b>Contract Number:</b>        |                |
| <b>D.O. Number:</b>        |              | <b>Action Memo Date:</b>       |                |
| <b>Response Authority:</b> | CERCLA       | <b>Response Type:</b>          | Emergency      |
| <b>Response Lead:</b>      | EPA          | <b>Incident Category:</b>      | Removal Action |
| <b>NPL Status:</b>         | Non NPL      | <b>Operable Unit:</b>          |                |
| <b>Mobilization Date:</b>  | 4/6/2017     | <b>Start Date:</b>             | 4/6/2017       |
| <b>Demob Date:</b>         | 4/24/2017    | <b>Completion Date:</b>        | 9/15/2017      |
| <b>CERCLIS ID:</b>         | ORN001002269 | <b>RCRIS ID:</b>               |                |
| <b>ERNS No.:</b>           |              | <b>State Notification:</b>     |                |
| <b>FPN#:</b>               |              | <b>Reimbursable Account #:</b> |                |

#### 1.1.1 Incident Category

Emergency Response - Potentially Responsible Party (PRP) lead without an enforcement order

#### 1.1.2 Site Description

In April 2017, the United States Environmental Protection Agency (EPA) responded to an emergency mercury release, and subsequently guided a PRP removal action (RA) at the Beaverton Mercury Response site (the Site) in Beaverton, Oregon. The emergency response (ER) and RA was performed to mitigate health risks from mercury and mercury compounds to future tenants, nearby residents, site visitors, and downstream environmental receptors.

The Site was part of a densely occupied multi-tenant housing complex, and storm water drainage conveyance infrastructure was present.

##### 1.1.2.1 Location

15282 SW Teal Blvd, Beaverton, Oregon  
Latitude 45.440075°  
Longitude -122.831939°

##### 1.1.2.2 Description of Threat

Mercury and mercury compounds

##### 1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Mercury was found spilled inside and along the entranceway to the Site garage. Mercury contaminated response materials (e.g. plastic sheeting, PPE) in addition to containers used to store or use the mercury in an alleged unpermitted pharmaceutical processing operation. Mercury compounds, in original laboratory containers, were also discovered at the Site in the apartment.

PPE requirements for entry into to the exclusion zone were varied depending on the task. Initial entry was conducted by law enforcement and TVFR wearing "bomb suits" and Level C turnout gear respectively. START and EPA, equipped with mercury vapor monitors, initially entered in Level C.

Action levels consistent with those established by EPA/Agency for Toxic Substances and Disease Registry (ATSDR) were used during site activities (ATSDR 2012). These include screening and action levels for ambient air in residential buildings, ambient air in garages, and contaminated personal items. Screening level ranges were used to identify areas and items that were contaminated and required PRP remediation, and subsequently to verify that PRP removal efforts were adequate.

#### Residence, Garage, and Pavement

The initial screening included the apartment associated with the contaminated garage, as well as pavement outside the garage. The screening levels were as follows:

- Indoor surfaces less than 1,000 nanograms per cubic meter (ng/m<sup>3</sup>): no further assessment.
- Outdoor (including garage) surfaces less than 6,000 ng/m<sup>3</sup>: no further assessment.
- Outdoor surfaces (including garage) at 6,000 ng/m<sup>3</sup> or greater: remediation required.
- Indoor or outdoor surfaces at 10,000 ng/m<sup>3</sup> or greater: public evacuated from area.

#### Personal Property

Three screening levels were established for assessing mercury vapor contaminated items to aid assessment teams in determining the appropriate decontamination or disposal procedures. These levels were as follows:

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- Items less than 1,000 ng/m3 required no treatment or disposal required;
- Items between 1,000 and 6,000 ng/m3 could be optionally 1) decontaminated and returned to the resident, or 2) no action taken; and
- Items above 6,000 ng/m3 either: 1) required decontamination and return to the owner, 2) disposed of as hazardous waste; or 3) left to the owner's care.

## 2. Current Activities

### 2.1 Operations Section

#### 2.1.1 Narrative

Initially, on April 6, 2017, during the ER phase, START monitored mercury vapor levels at the Site using a Jerome 431-X, which uses a gold-foil conductance sensor. This technology has a lower limit of detection of approximately 3,000 ng/m3, though actual field conditions can increase that limit.

START measured 0 to 4,000 ng/m3 mercury vapor in the outdoor breathing zone, substantially less than the action level (10,000 ng/m3). These results are within to just above the detection limit under ideal conditions, and thus there is low confidence that actual vapor levels were that high.

Immediately above outdoor pavement, START measured 0 to 6,000 ng/m3 mercury vapor in air, equal to or below the action level (6,000 ng/m3). The maximum detection reached a level where greater confidence in the result was warranted, except that the instrument detected zero ng/m3 mercury vapor adjacent to a liquid mercury puddle along the Site garage entrance.

Inside the Site garage, START measured 581,000 ng/m3 mercury vapor in a small container's headspace, indicating that this item contained mercury or was contaminated with mercury and required disposal.

Finally, during the first day of the ER phase, START measured 0 to 7,000 ng/m3 mercury vapor in the indoor breathing zones of the Site garage and apartment. In the Site apartment, START measured 8,000 ng/m3 mercury vapor inside the washer and dryer and 9,000 ng/m3 mercury vapor in air around chemical bottles in the indoor greenhouse area. These measurements were below the action level (10,000 ng/m3).

#### Removal Action Objectives

The RA was performed to mitigate or prevent the risks of mercury and chemical exposure to human health and ecological receptors:

- Human Health Receptors. Mercury released near the garage entrance posed a hazard to tenants living inside the building, and posed a hazard to visitors, workers, and tenants (including children), particularly when the garage door was open, or upon migration of mercury outside the garage. Other hazardous materials in containers posed a potential hazard to tenants, particularly in the event containers leaked, or incompatible materials mixed.
- Ecological Receptors. Migration of mercury or other chemicals from the garage to nearby storm water catchment basins, and ultimately to the watershed posed a hazard to water quality and to aquatic species and their predators.

#### 2.1.2 Response Actions to Date

START performed initial stabilization operations on the spilled mercury by applying finely powdered sulfur on visible mercury beads and puddles on April, 6, 2017

START / EPA received a more sensitive Lumex RA-915+ mercury vapor analyzer on April 7, 2017. START and EPA mobilized to the Site with the Lumex on April 7, 2017 to monitor mercury vapor concentrations in the garage and oversee the PRP's removal contractor, J.R. Johnson Inc. (JRJ), during garage cleanup operations. Initial entry readings in the breathing space zone were 30 to 575 ng/m3. Readings collected along the garage floor and under a containment tarp placed on the garage floor measured up to 4,500 ng/m3. EPA and START then observed JRJ attempt to remove the mercury using a standard High-Efficiency Particulate Air (HEPA) vacuum. START continuously monitored the airspace immediately outside the open garage door, and once the contractor began to vacuum the mercury, the Lumex reported mercury vapor levels of 50,000 ng/m3. EPA immediately halted removal operations, and told JRJ to properly dispose of the HEPA vacuum as hazardous waste. JRJ could not supply an appropriately certified vacuum capable of retaining mercury vapor, or appropriately trained personnel. Because JRJ could not provide adequate equipment or personnel, the PRP subsequently located and hired a qualified mercury remediation contractor, NRCES.

On April 10, 2017, EPA and START returned to the Site after NRCES conducted the cleanup of the mercury in the garage space. START monitored mercury vapor levels in entranceway ambient air, garage floor surface level air, indoor garage ambient air, and the headspace air of the vehicle parked in the garage via a cracked window. Entranceway ambient air peak readings were 72 ng/m3, garage floor surface level air peak readings were 650 ng/m3, and the indoor garage ambient air peak readings were 340 ng/m3, significantly below all action levels (1,000 ng/m3). However, the headspace air of the vehicle peak readings were 1,300 ng/m3, and the plastic tarp still remained on the garage floor, and measured 4,500 ng/m3. EPA reported the tarp to the PRP, and instructed the PRP to remove the tarp during the apartment space cleanup.

On April 23, 2017, EPA and START conducted a post-RA mercury vapor assessment of the Site. At the apartment, START measured mercury vapors in entranceway ambient air, front mat surface level air, indoor ambient air, sink drains headspace air, vacuum cleaner filter surface air, furniture surface air, indoor greenhouse equipment surface air, ventilation duct headspace air, washer and dryer headspace air, labware surface air, closet ambient air, and tote bins headspace air. All measurements were within 15 to 90 ng/m3, significantly below all action levels.

At the garage, START measured up to 700 ng/m3 in ambient breathing zone air, up to 1,300 ng/m3 at the floor surface, up to 2,500 ng/m3 in the vehicle parked in the garage, and up to 6,000 ng/m3 from the plastic tarp stored on the garage floor. Mercury vapor levels from the plastic tarp were at the limit for what could be retained without requiring disposal; all other measurements were below action levels.

NRCES placed all recovered mercury, mercury compounds, and mercury contaminated wastes in Department of Transportation specification containers, and arranged for licensed transportation to permitted disposal facilities. The recovered mercury (including mercury stabilized with sulfur) went to Metro South Transfer Station and to U.S. Ecology's Grandview, Idaho facility. The mercury compounds and mercury-contaminated wastes went to Clean Harbors' El Dorado, Arkansas facility.

#### 2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

EPA oversaw advised and oversaw all cleanup activities by the apartment management company

#### 2.1.4 Progress Metrics

Mercury related wastes were handled by two PRP subcontractors. The first subcontractor was determined by EPA to not be qualified to remediate mercury spills due to inadequate training and equipment. The PRP's replacement contractor, NRCES, provided adequately trained personnel and equipment to remediate the mercury spill and handle associate wastes on the Site. NRCES ultimately contracted a licensed waste transporter and permitted disposal facilities.

The disposition of non-mercury related hazardous substances is unknown at this time. The substances, in original packaging, were consolidated from the Site apartment and garage at an apartment maintenance building that was not attached to any residential dwellings. The apartment maintenance staff initially stated they had planned to dispose of the substances on the tenant's behalf at Metro's Oregon City HHW disposal facility, but then had decided they were not qualified to safely transport the substances. The maintenance staff informed EPA on April 24, 2017 that they would ask NRCES to manage the disposal of these substances. Subsequently, the APA manager, representing the PRP, informed EPA that the HHW items were disposed by JRJ, but JRJ has not yet provided any disposal documentation.

The wastes generated from the 2017 RA included mercury, mercury contaminated wastes, mercury compounds, and other hazardous materials (flammable solids, flammable liquids, flammable gas, corrosive liquids, and poisons). A summary of these waste streams and their final location of disposition are provided below.

| Waste Stream | Quantity | Disposal Facility/Method |
|--------------|----------|--------------------------|
|              |          |                          |

|   |   |                                     |
|---|---|-------------------------------------|
| Mercury (including mercury stabilized with sulfur powder) | 75 pounds   | U.S. Ecology, Grandview, Idaho      |
| Mercury contaminated wastes                               | 26 pounds   | Clean Harbors, El Dorado, Arkansas  |
| Mercury compounds   | 1 pound   | Clean Harbors, El Dorado, Arkansas  |
| Mercury (recovered from mercury vacuum)                   | 5 gallon pail   | Metro South Transfer Station as HHW |
| Other Hazardous Materials                                 | Disposal documentation requested, but not received from the PRP |                                     |

### Household Materials Inventory

| Item Description                                      | Quantity              | Primary Hazard                                  |
|---|-----------------------|---|
| Propane (Coleman fuel)                                | 1 cylinder (~1 L)     | 2 - Flammable Gas                               |
| Acetone, anhydrous reagent,<br>CAS 67-64-1            | 1 bottle (500 ml)     | 3 - Flammable Liquid                            |
| Diethyl ether, anhydrous gas, 99% stabilized          | 1 cylinder (500 ml)   | 3 - Flammable Gas                               |
| Ethyl alcohol, denatured                              | 1 bottle (16 oz.)     | 3 - Flammable Liquid                            |
| Formaldehyde, technical grade,<br>CAS 50-00-0         | 1 bottle (1 gallon)   | 3 - Flammable Liquid                            |
| Toluene   | 1 can                 | 3 - Flammable Liquid                            |
| Black powder  | 3 bottles (1 lb.)     | 4 - Flammable Solid                             |
| Potassium perchlorate powder                          | 1 bag (3 lbs.)        | 5.1 - Oxidizer                                  |
| Fertilizer and plant growing chemicals                | 40 bottles (assorted) | 6 - Toxic (potentially) or<br>9 - Miscellaneous |
| Acid, general purpose hydroponics                     | 1 bottle (946 ml)     | 8 - Corrosive                                   |
| Calcium Oxide, lumps, CAS 1305-78-8                   | 2 bottles (500 g)     | 8 - Corrosive                                   |
| Hydrochloric (muriatic) acid,<br>20 Baume (31.45%)    | 1 bottle (~2 L)       | 8 - Corrosive                                   |
| Sulfuric acid   | 1 bottle (~ 2 L)      | 8 - Corrosive                                   |
| Potassium hydroxide, flakes (caustic potash, KOH dry) | 1 bottle (~ 125 ml)   | 8 - Corrosive                                   |

#### Community involvement:

Throughout the ER and RA phases, EPA maintained communications with applicable state and local agencies and with the public.

Ex. 7(E)

EPA provided the public with frequently updated information about the site and the progress of the cleanup actions by establishing a website with information about the site emergency operations and subsequent RA.

## 2.2 Planning Section

### Project Timeline



|   |                |
|---|----------------|
| START emergency mobilization to the Site  | April 6, 2017  |
| Initial site entry by EPA and START after the scene is secured by FBI, Beaverton PD, and TVFR, and after forensic investigations have been completed. | April 6, 2017  |
| START demobilization from the Site (emergency phase concluded)  | April 7, 2017  |
| START and EPA visit the Site to perform garage post-remediation assessment  | April 10, 2017 |
| START and EPA visit the Site to perform apartment post-remediation assessment   | April 23, 2017 |
| START visits the Site to provide technical waste disposal assistance to the PRP   | April 24, 2017 |
| START visits the Site and contacts NRCES to obtain disposal documentation   | August 2017    |

**Next Steps:**

EPA conducted post-RA monitoring by directing START to measure mercury vapor levels in ambient air and surface level air in the Site garage where the spill remediation occurred. Mercury vapor levels were below the residential action levels therefore no further EPA action is planned for the Site.

**2.3 Logistics Section**

N/A

**2.4 Finance Section**

**Estimated Costs \***

|                         | Budgeted    | Total To Date | Remaining   | % Remaining |
|-------------------------|-------------|---------------|-------------|-------------|
| <b>Extramural Costs</b> |             |               |             |             |
| TAT/START               | \$28,550.00 | \$12,900.00   | \$15,650.00 | 54.82%      |
| <b>Intramural Costs</b> |             |               |             |             |
|                         |             |               |             |             |
| <b>Total Site Costs</b> | \$28,550.00 | \$12,900.00   | \$15,650.00 | 54.82%      |

\* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

**2.5 Other Command Staff**

N/A

**3. Participating Entities**

**Cooperating Agencies**

**Ex. 7(E)**

**PRP:** The PRP who coordinated the RA was the rental property management company, Andover Park Apartments. Another PRP was the tenant of the Site apartment. START is unaware of any additional PRPs.

**START:** E & E, under an EPA Region 10 START contract, provided on-site technical assistance, and documented a subset of site activities.

**TVFR:** Tualatin Valley Fire and Rescue provided local hazardous materials and fire response capability.

**4. Personnel On Site**

- 1 EPA OSC
- 2 START contractors

**5. Definition of Terms**

No information available at this time.

**6. Additional sources of information**

**6.1 Internet location of additional information/report**

N/A

**6.2 Reporting Schedule**

This is an initial and final POLREP.

**7. Situational Reference Materials**

No information available at this time.